Bloomberg Philanthropies
INITIATIVE FOR GLOBAL ROAD SAFETY

JOHNS HOPKINS
BLOOMBERG SCHOOL
of PUBLIC HEALTH

International
Injury Research Unit

# Bloomberg Philanthropies Initiative for Global Road Safety (BIGRS) 2020–2025 Roadside Observational Study

## Technical Appendix for Dhaka North Round Two

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# Roadside observational study

## Technical Appendix for Dhaka North Round 2

The Johns Hopkins International Injury Research Unit partnered with the Centre for Injury Prevention and Research, Bangladesh to conduct roadside observations in Round 2, (Apr – May 2022). The methods for these findings were developed by the Johns Hopkins International Injury Research Unit and implemented in collaboration with the Centre for Injury Prevention and Research, Bangladesh. This report provides results from observational surveys that represent population-level (citywide) prevalence of important road safety risk factor (speed) in Round 2. For speed, there were approximately 44,341 observations.

Observation sites were selected to obtain a representative sample of vehicles and road users in each city, conditional on the safety of observers. There were 15 observation sites per risk factor, and a standardized protocol was used with vehicles selected for observation in a systematic quasi-random fixed sequence. Observations were performed between 7:30 a.m. and 7 p.m. on both weekend days and weekdays. The methods were designed to estimate citywide prevalence and cannot provide insights into interventions conducted in specific locations in the city.

This technical appendix was created on 2022-04-11 by the Johns Hopkins International Injury Research Unit using the following files:

- BIGRS3_GAR tech appendix_220411.do
- R2_Dhaka North_BIGRS3 speed.dta

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# 1. Speeding

## Key findings

- Overall, 15% of vehicles were traveling over the posted speed limit.
- Speeding was highest among buses (44%), followed by pickup/light trucks (31%) and minibus/minivan (30%).
- Nearly, 64% of the vehicles on collector/local roads were traveling above the safe speed (30km/h).
- One out of 4 commercial vehicle was traveling above the posted speed limit

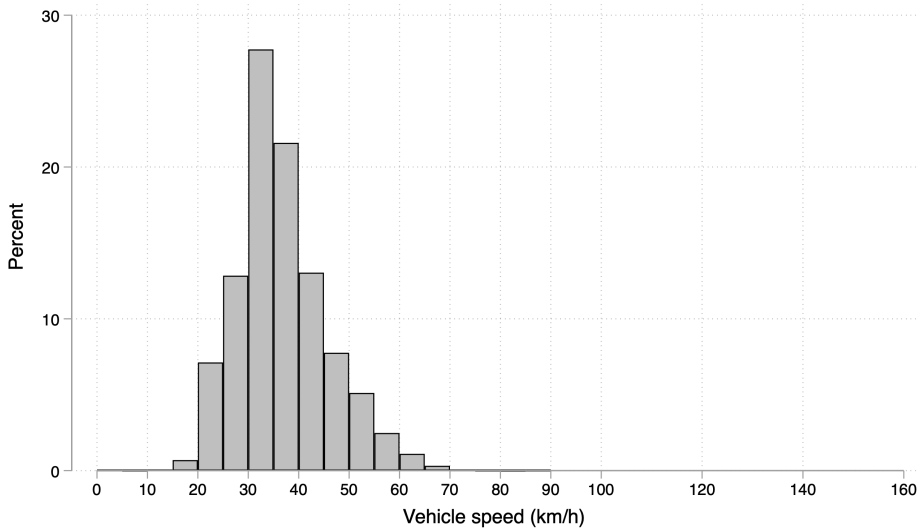
## 1.1. Total number of observed vehicles

44341

## 1.2. Prevalence of speeding and mean, median, and 85th percentile speed among all vehicles

| N | Prevalence (%) | Mean (km/h) | Median (km/h) | 85th pctl (km/h) |
|---|---|---|---|---|
| 44313 | 14.7 | 36.0 | 35 | 46 |

## 1.3. Histogram of speed among all vehicles



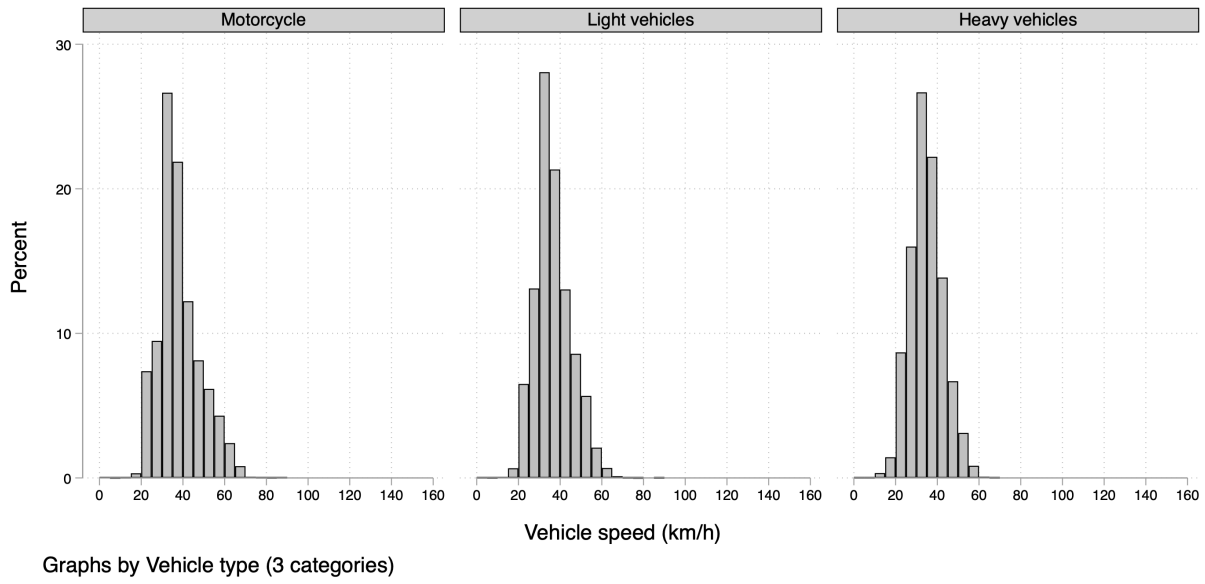
## 1.4. Prevalence of speeding and mean, median, and 85th percentile speed by vehicle type (motorcycles, light vehicles, heavy vehicles)

| Vehicle type | n | Prevalence (%) | Mean (km/h) | Median (km/h) | 85th pctl (km/h) |
|---|---|---|---|---|---|
| Motorcycle | 13949 | 9.0 | 37.5 | 36 | 49 |
| Light vehicles* | 21731 | 14.6 | 36.0 | 35 | 46 |
| Heavy vehicles† | 4732 | 44.4 | 34.3 | 34 | 42 |

* Light vehicles include sedan/saloon/SUV/4WD, minibus/minivan, and pickup/light truck.
† Heavy vehicles include bus and truck/large truck.

| Vehicle type | n | Prevalence (%) | Mean (km/h) | Median (km/h) | 85th pctl (km/h) |
|---|---|---|---|---|---|
| Pickup/Light truck | 3189 | 30.5 | 35.1 | 34 | 45 |
| Bus | 4732 | 44.4 | 34.3 | 34 | 42 |
| Minibus/Minivan | 1030 | 30.1 | 37.5 | 36 | 48 |
| Sedan/Saloon/SUV/4WD | 17512 | 10.8 | 36.1 | 35 | 46 |
| Motorcycle | 13949 | 9.0 | 37.5 | 36 | 49 |
| Other | 3901 | 0.0 | 33.2 | 33 | 40 |

## 1.5. Histogram of speed by vehicle type



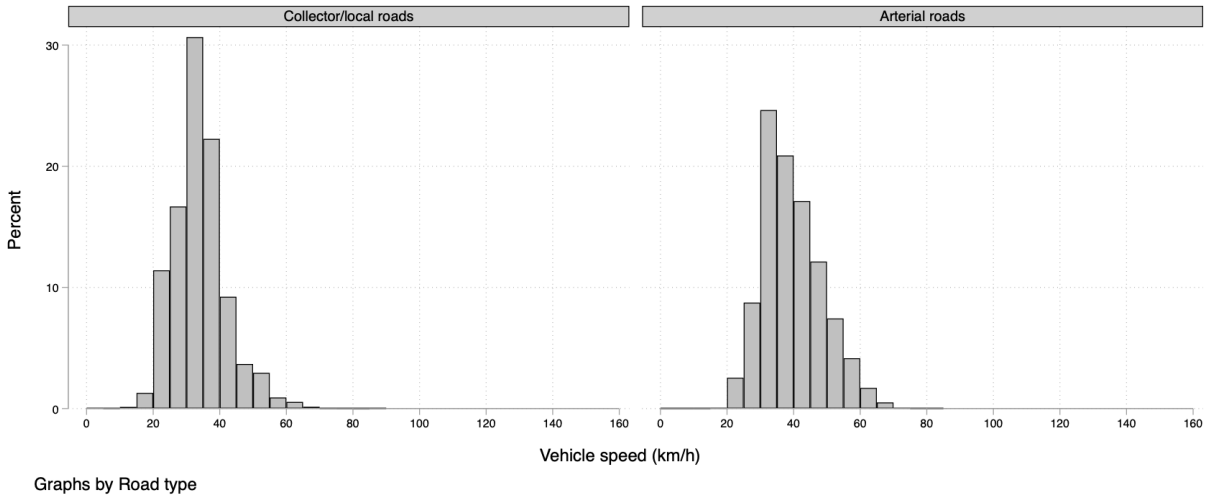
## 1.6. Prevalence of speeding and mean, median, and 85th percentile speed by road type (collector/local, arterial)

| Road type | n | Prevalence (%) | Mean (km/h) | Median (km/h) | 85th pctl (km/h) |
|---|---|---|---|---|---|
| Collector/local | 22889 | 12.7 | 33.2 | 32 | 41 |
| Arterial | 21424 | 16.8 | 39.1 | 38 | 49 |

## 1.7. Prevalence of speeding over 30 km/h in collector/local roads & 50 km/h in arterial roads

| | n | Prevalence (%) |
|---|---|---|
| > 30 km/h in collector/local | 21424 | 63.8 |
| > 50 km/h in arterial | 22917 | 12.1 |

## 1.8. Histogram of speed by road type




## 1.9. Prevalence of speeding, speeding by more than 10 or 20 km/h above the limit, and mean, median, and 85th percentile speed by speed limit

| Speed limit (km/h) | n | Prevalence of speed > limit (%) | Prevalence of speed > limit + 10 (%) | Prevalence of speed > limit + 20 (%) | Mean (km/h) | Median (km/h) | 85th pctl (km/h) |
|---|---|---|---|---|---|---|---|
| 30 | 6064 | 53.5 | 0.1 | 0.0 | 31.1 | 31 | 37 |
| 40 | 11945 | 14.9 | 0.0 | 0.0 | 33.5 | 33 | 40 |
| 50 | 13941 | 8.0 | 0.0 | 0.0 | 36.9 | 36 | 47 |
| 60 | 8462 | 4.5 | 0.0 | 0.0 | 43.0 | 42 | 54 |
| 999 | 0 | . | 0.0 | 0.0 | 28.9 | 29 | 34 |

## 1.10. Prevalence of speeding and mean, median, and 85th percentile speed by vehicle ownership

| Vehicle ownership type | n | Prevalence (%) | Mean (km/h) | Median (km/h) | 85th pctl (km/h) |
|---|---|---|---|---|---|
| Commercial | 12008 | 24.8 | 34.4 | 33 | 43 |
| Taxi | 123 | 10.6 | 37.9 | 38 | 47 |
| Ride-share | 1454 | 22.1 | 43.6 | 44 | 55 |
| Other (incl private and govt) | 30728 | 10.4 | 36.3 | 35 | 46 |

## 1.11. Prevalence of speeding and mean, median, and 85th percentile speed by day of the week

| Day of the week | n | Prevalence (%) | Mean (km/h) | Median (km/h) | 85th pctl (km/h) |
|---|---|---|---|---|---|
| Monday | 7037 | 10.5 | 31.9 | 32 | 37 |
| Wednesday | 7123 | 11.6 | 38.8 | 38 | 48 |
| Thursday | 6512 | 17.2 | 40.7 | 40 | 51 |
| Friday | 7304 | 25.2 | 43.4 | 42 | 53 |
| Saturday | 8344 | 12.4 | 31.2 | 31 | 37 |
| Sunday | 7993 | 11.9 | 31.7 | 32 | 37 |

## 1.12. Prevalence of speeding and mean, median, and 85th percentile speed by observation session start time

| Session start time | n | Prevalence (%) | Mean (km/h) | Median (km/h) | 85th pctl (km/h) |
|---|---|---|---|---|---|
| 6:30-9:00 | 9136 | 16.5 | 36.4 | 35 | 46 |
| 9:01-11:00 | 9134 | 14.0 | 36.0 | 35 | 45 |
| 11:01-14:00 | 8858 | 13.5 | 35.8 | 35 | 45 |
| 14:01-16:00 | 9009 | 13.8 | 35.9 | 35 | 45 |
| 16:01-19:00 | 8176 | 15.8 | 36.0 | 35 | 45 |

The following analyses on speeding are restricted to vehicles in free flow speed, which are defined as those traveling faster than the speed limit when/where there is no impedance for drivers to speed freely, such as bad weather, a junction, tight bend, speed bump, stop sign, crosswalk, and law enforcement activities nearby.

### 1.13. Mean, median, and 85th percentile among vehicles in free flow speed

| n | Mean (km/h) | Median (km/h) | 85th pctl (km/h) |
|---|---|---|---|
| 4225 | 45.7 | 44 | 56 |

### 1.14. Mean, median, and 85th percentile among vehicles in free flow speed by vehicle type

| Vehicle type | n | Mean (km/h) | Median (km/h) | 85th pctl (km/h) |
|---|---|---|---|---|
| Motorcycle | 699 | 55.2 | 61 | 65 |
| Light vehicles* | 2121 | 46.8 | 47 | 55 |
| Heavy vehicles† | 1405 | 39.2 | 37 | 47 |

* Light vehicles include sedan/saloon/SUV/4WD, minibus/minivan, and pickup/light truck.
† Heavy vehicles include bus and truck/large truck.

### 1.15. Mean, median, and 85th percentile among vehicles in free flow speed by road type

| Road type | n | Mean (km/h) | Median (km/h) | 85th pctl (km/h) |
|---|---|---|---|---|
| Collector/local | 1909 | 43.5 | 41 | 54 |
| Arterial | 2316 | 47.5 | 46 | 59 |

### 1.16. Mean, median, and 85th percentile among vehicles in free flow speed by speed limit

| Speed limit (km/h) | n | Mean (km/h) | Median (km/h) | 85th pctl (km/h) |
|---|---|---|---|---|
| 30 | 1505 | 36.2 | 35 | 41 |
| 40 | 1469 | 45.5 | 44 | 51 |
| 50 | 869 | 54.1 | 52 | 58 |
| 60 | 382 | 64.1 | 63 | 66 |

### 1.17. Mean, median, and 85th percentile among vehicles in free flow speed by vehicle ownership

| Vehicle ownership type | n | Mean (km/h) | Median (km/h) | 85th pctl (km/h) |
|---|---|---|---|---|
| Commercial | 1999 | 41.0 | 40 | 51 |
| Taxi | 4 | 50.8 | 53 | 65 |
| Ride-share | 228 | 56.2 | 55 | 63 |
| Other (incl private and govt) | 1994 | 49.1 | 48 | 62 |

### 1.18. Mean, median, and 85th percentile among vehicles in free flow speed by day of the week

| Day of the week | n | Mean (km/h) | Median (km/h) | 85th pctl (km/h) |
|---|---|---|---|---|
| Monday | 494 | 38.7 | 37 | 47 |
| Wednesday | 515 | 48.6 | 51 | 45 |
| Thursday | 727 | 47.9 | 47 | 62 |
| Friday | 1394 | 50.5 | 51 | 62 |
| Saturday | 601 | 39.4 | 41 | 61 |
| Sunday | 494 | 40.2 | 40 | 45 |

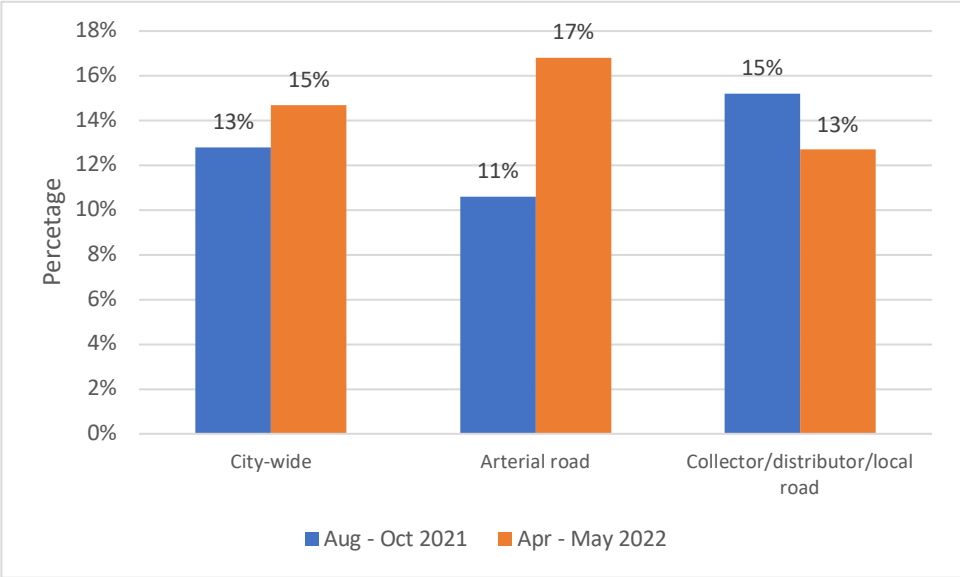
### 1.19. Mean, median, and 85th percentile among vehicles in free flow speed by observation session start time

| Session start time | n | Mean (km/h) | Median (km/h) | 85th pctl (km/h) |
|---|---|---|---|---|
| 6:30-9:00 | 959 | 44.4 | 43 | 54 |
| 9:01-11:00 | 896 | 45.3 | 44 | 56 |
| 11:01-14:00 | 773 | 45.7 | 44 | 56 |
| 14:01-16:00 | 721 | 45.7 | 44 | 56 |
| 16:01-19:00 | 876 | 47.3 | 45 | 56 |

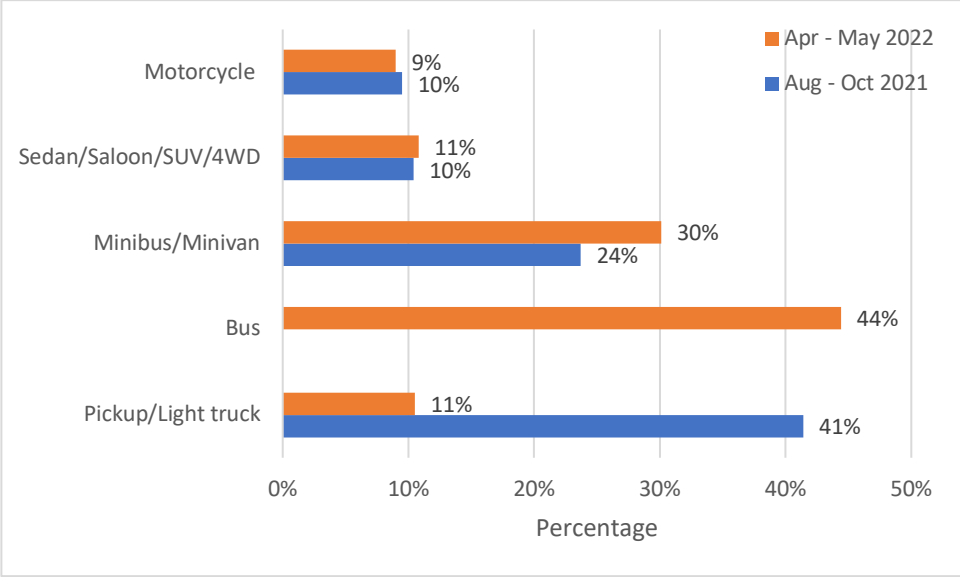
## Comparison of speed observational data (Round 1 – 2)

| | Baseline | Round 2 |
|---|---|---|
| **Overall prevalence (%)** | 12.8 | 14.7 |
| Mean (km/h) | 32.2 | 36 |
| Median (km/h) | 32 | 35 |
| 85$^{th}$ pct (km/h) | 42 | 46 |

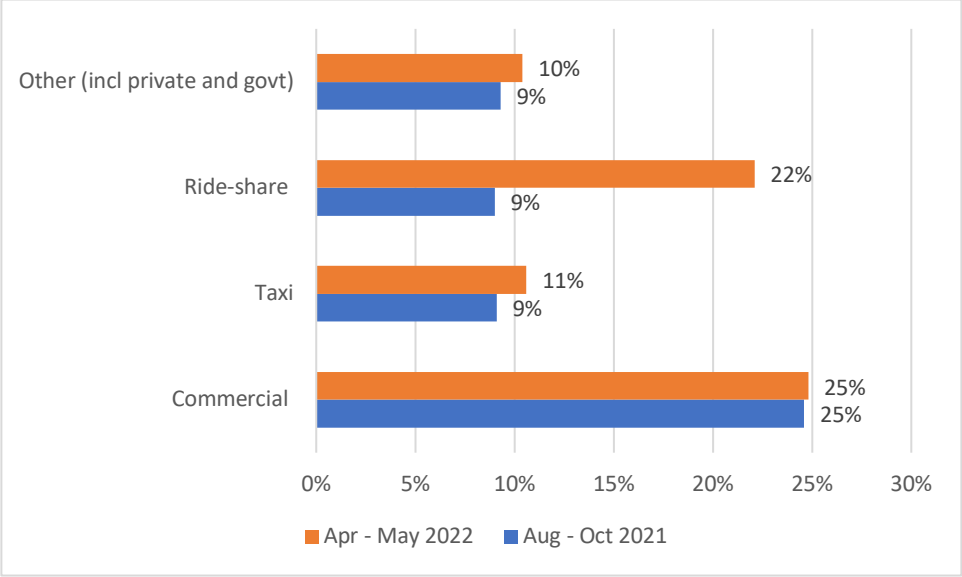
**Speed prevalence by road type**



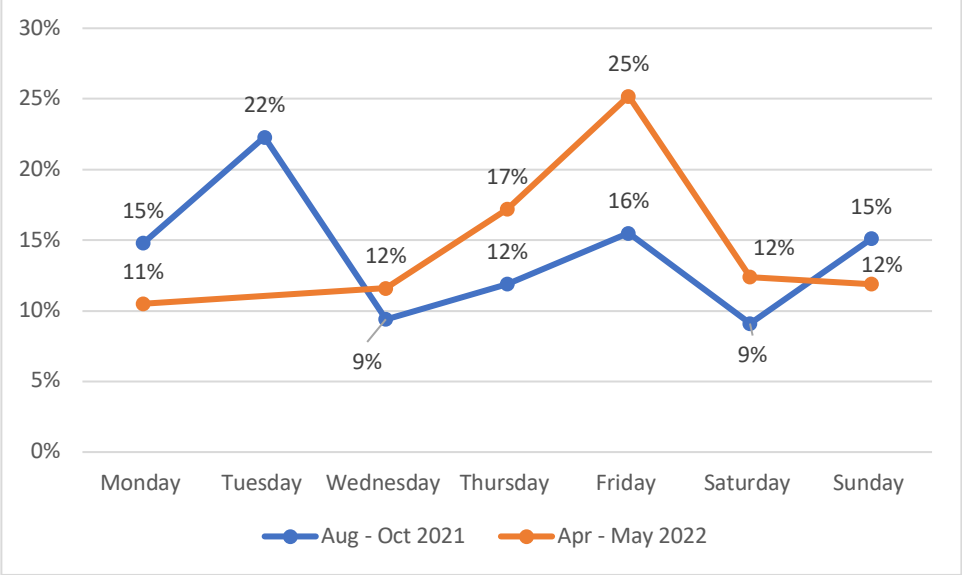

**Speed prevalence by vehicle type**



**Speed prevalence by vehicle ownership type**




**Speed prevalence by day of the week**



**Speed prevalence by time of the day**